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An Experimental Study of Contribution of Learning Objective to Achievement Scores Through Lecture and Guided Discovery Methods

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INTRODUCTION

Bloom, et. al. (1955) submitted a project on the classificational objectives whereby he indentified teaching learning objectives (goals)—from knowledge to evaluation in cognitive domain, a domain dealing with the thinking processes. Guilford (1959) also attempted researches in cognitive domain whereby cognitive processes were termed as intellectual operations referring to perceiving...........creativity. Guilford (1958) further attempted some work in psychomotor domain through which extended classification of objectives with special reference to content, processes and product. Teaching learning objectives were identified as speed, strength, impulsion, precision, co-ordination and flexibility with reference to reading, writing, speaking drawing, calculating as psychomotor skills/activities.

Bruner (1960) undertook some experimental studies to conduct research based on Piaget's Theory of Intellectual Development. Bruner's 'Process of Education', marked the turn of the present century and crossed the national boundaries. The work advanced in the cognitive domain by Burner (1960) opened new area of research. The work was further extenned by him strongly advocating discovery appoach in terms of objectives, style of instruction, readiness to receive and learning theories. The main controversies in the teaching-learning of Science and Mathematics arose when Gagne (1965) advocated 'guided discovery approach strongly stressing on educational technology' nearing to programmed learning where teaching learning situations are organised in a sequential manner by the programmer Krathwohl, *et.al* (1964) submitted another projectives (goals) attempting the study in affective domain whereby they identified educational objectives-interest, attitude, appreciation, value and adjustment with their categories and sub-categories.

With the development of novel theories of learning advanced by Bruner (1960), Piaget (1896-1980), Ausubel (1963, 1968), Novak (1971-1977) in cognitive area, at one hand and the learning theories evolved by the behaviourists-Watson, Guthrie Skinner, Thorndike, Hull and Tolman on the other hand, new approaches of teaching learning emerged to facilitate teaching-learning situations effectively (Yadav, 1980). The studies in the field of methodology were undertaken and suggested by Deva (1958), Rai (1961), Pillai (1968), Jehnings (1975), Geyal (1975), Yadav (1977), and Patel and Patel (1980), to further identify the effectiveness of one method of teaching over the other. The recommendations and suggestions were also reflected in the reports of the commissions submitted from time to time (e. g. Secondary Educations Commission, 1952-53; Kothari Commission, 1964-66 and International Commission on the Development of education, 1972).

The present study has been undertaken with the view of identifying the contribution of learning objectives to obtained achievement scores on pretest and posttest by exposing the subjects of the lecture and guided discovery methods to experimentation.

HYPOTHESES

The following hypotheses were formulated for the present study.

(a) Conceptual Hypotheses

(i) Learning situations planned through lecture and guided discovery methods may lead to differ in their academic achievement.

(ii) Children taught through lecture and guided discovery methods accomplish different achievement scores in terms of knowledge, understanding, application and skill.

Statistical Hypotheses

(i) There is no significant difference in mean achievement scores of the subjects taught through lecture and demontration methods.

(iii) There is no significant difference in mean achievement scores of the subjects taught through control and experimental groups in terms of :

(a) Knowledge,
(b) Understanding, and
(c) Skill.

Objectives of the Study

The present study was designed with the view to achieve the following objectives :

(i) To find out the comparative-effectiveness of the lecture and the guided discovery methods based on the achievement scores obtained on pretest and posttest.

(ii) To find out comparative efficacy of the lecture and the guided discovery in terms of knowledge, understanding, application and skill objectives.

(iii) To suggest the findings of the present study at Junior and Higher Secondary stages.

RESEARCH DESIGN

(i) Sample

The present study was conducted on a randon sample (Garret, 1979; Best, 1979), Sukhia & Mehrotra, (1969) of 32 subjects studying at Adarsh Model School, Tehri (India), Session 1979-80. The sample was (Guilford, 1959 Edwards 1973) divided into two matched/equated groups 'A' and 'B' on the basis of their previous year annual academic achievement in VI class especially taking into consideration one by one matching in both the groups. The groups—'A' and 'B' were termed as the control and the experimental groups respectively (Edward, 1971 ; Fisher, 1935).

(ii) Experimentation

The experimental method (Edward, 1971, Fisher, 1950 and Richardson, 1969) of research was employed to conduct the present study. The matched groups—'A' and 'B' were taught through the lecture and the guided discovery methods by strictly keeping in view the norms & principles, methodology and use of material aid for each method. The control group—'A' was taught through lecture method following the norms of that method (Newith, 1965). Similarly, the experimental group 'B' was taught by the experimenter himself based on the norms specified by Shulman (1967, 1969 ; Gagrie 1965, 1977) under experimentation. The subjects of the control group 'A' and these of the experimental group 'B' were taught through lecture and Guided Discovery methods for 15 days for equal number of days, keeping all the factors constant except the methodology by the experimenter. Pretest and posttest were prepared on the basis of the blueprint (Misra & Harper, 1968).

Tools and Techniques

In order to obtain data, the pretest and the posttest were made by the experimenter himself and administered before starting the experimentation and after the completion of the experimentation respectively. The data obtained on pretest and posttest were processed by applying *t*—ratio (Garret, 1979 ; Ferguson, 1979 ; Fisher, 1950). The mean, S. D., *r* (coefficient of correlation) and *t*—ratio were computed to analyse and interpret the data from the obtained achievement scores on pretest and posttest.

Analysis and Interpretation

The data were systematically recorded, analysed and interpreted on the basis of the norms (Guilford, 1956 ; Ferguson, 1976 ; Fisher, 1935 and Richardson, 1939) i.e. applying suitable statistical tests. The detailed Analyse's is presented below in the tables :

TABLE—I

Mean, S. D. *r* and *t* values for the Control and Experimental Groups.

Groups and obtained Values	*Control Pretest*	*Group Posttest*	*Experimental Pretest*	*Group 'B' Posttest*
Obtained Mean	34·05	25·71	33·88	29·33
Obtained S. D. ((σ)	8·80	8·90	7·80	15·60
Standard Error of Mean (σM)	2·35	2·28	2·01	4·03
Coefficient of correlation (r_I)	(r_I) 0·439	(Not significant)	(r_2) 0·490	(Significant)
Obtained 't'	3·336* (S)	P<·01	1·296** (N.S.)	p>0·10
Degrees of Feedom (df=N—1)	13		14	

The mean achievement scores of the control and the experimental groups-'A' & 'B' obtained on pretest & posttest and their corresponding S. D. values, standard error of means, correlation coefficient (*r*) and '*t*' values have been shown in the table-I. It is evident from table-I. It is evident from table I that the value of correlation coefficient (r_I) was found to be nearly reaching the required value (r=0.441) but the same could not reflected to be significant at 0.05 level of significance. However, the obtained (r_I) value for the subjects of the control group was found to be significant only at 0·10 level which further gave insight into the obtained achievement scores of the subjects of the control group on pretest and posttest. The obtained '*t*' value (3·336) exceeded the required '*t*' value at 0·01 level of significance. However, it was inferred that there was significant difference in mean achievement scores of the subjects of the control group obtained on pretest and posttest.

Thus, it was further concluded that the subjects of the control group gained significantly better on pretest than did the subjects on the posttest. The reason behind the increased achievement scores in favour of pretest could be frunished on critical analysis and logical interpretation, as follows :

(i) The content taught by the science teacher might be easier than that taught by the experimenter.

(ii) The experimental research worker taught the control group through lecture method, the science teacher of the concerned school might have taught the subjects by using material aid.

(iii) It is also possible that the subjects might have taken help of the tutor in the content from which the pretest was administered over the subjects.

The values of mean achivement scores, S. D., standard error of means, 'r' and 't' for experimental group have shown in the table I. The obtained value of correlation coefficient (r_2) was found to be 0·490 which exceeded the required value of 'r' at 0·05 level of significance which gave further insight into the obtained achievement scores of the subjects of the experimental group obtained on pretest & posttest. It was further inferred that contents of the pretest and posttest taught to the subjects under experimentarion had significant correlationship.

The obtained 't' value could not reach the required 't' value even at 0·10 level of significance. Hence it was concluded that there was no significant difference in mean achievement scores of the subjects of the experimental group-'B' obtained on pretest and posttest.

In order to further analyse the data, Fisher's *t*-ratio was used.

TABLE II

Mean, S.D. and 't' values for Groups-'A' and 'B' on Post-test.

Group and obtained values	Control Group-'A' (Lecture method)	Experimental G. p. 'B' (Guided Discovery
Obtained Means.	25·71	29·33
Obtained S. D.'s	8·90	15·60
Difference between means	3·62	
Obtained 't' value	0·72	
df (Degrees of freedom) (N+N-2)	27	
Significant or not significant	Not significant even at 0·10 level of confidence	

Required 't' at 0·10 level=1·70 ; at 0·05 level=2·05 ; at 0·01 level=2·77

From table-II, it is evident that the obtained S. D. values of the subjects of control and the experimental groups-'A' and 'B' deviated much from each other. A difference of 6·7 between their S. D. values clearly indicates the heterogeneity in the achivement scores of two groups. It is also inferred that though two groups were matched on the basis of their previous year annual academic achievement, their obtained achievement scores on post-test were not normally distributed. The heterogeneity of the obtained achievement scores of two groups indicates the reliability coefficient to be higher, (that is realiability coefficient of the achievement test). The obtained 't' could not reach the required 't' even at 0·10 level of significance. The required '*t*' is more than the obtained '*t*' value ; hence, statistically there was no significant difference in mean achievement scores of the two groups. A mean difference in achievement scores of the two groups simply indicated a trend of improvement in favour of guided discovery method.

In order to identify as to what contribution is extended by learning objectives to the achievement scores of the subjects, the data were further processed by applying Fisher's '*t*' ratio in terms of knowledge, understanding, application and skill components keeping in view the indepedent entities of learning objectives. The tables III, IV, VI show objective wise analysis of the obtained achievement scores of the control and the experimental groups.

TABLE-III

Mean, S. D. and '*t*' values for knowledge component on post-test.

Group and obtained values	Control Gronp 'A' (Lecture Method)		Experimental Group—'B' (Guided Discovery)
Obtained Mean (M)	17.57		20.40
Obtained S. D.	7.87		10.50
Difference between Mean		2.83	
Obtained '*t*'		0.83	
df (Degrees of Freedom) N^1+N^2-2		27	
Significant or not significant		Not significant even at 0·10 level	

Table-III shows that a mean difference in achievement scores of the subjects of the control and the expt. groups was found to be 2.83 for knowledge component in favour of experimental group. The obtained '*t*' did not reach the required '*t*' even at 0.10 level of significance. Hence, it was interpreted that there was no significance in mean achievement scores of the subjects of the control and the experimental groups taught through lecture and guided discovery methods respectively. The obtained S. D. values of the two groups deviated by 2.63 which again indicated heterogeneity in the achievement scores of the two groups.

The observed apparent increasease in mean achievement scores of the two groups indicated a trend of betterment in favour of guided discovery method. It is also inferred that the so reflected trend of betterment in favour of guided discovery method further imparts insight in the direction that the guided discovery method may contribute significantly better achievement if the simlar experimentation be carried out on larger samples.

TABLE-IV

Mean, S. D. and '*t*' values for 'Understanding' obtained on posttest.

Group and obtained values	Control Group-'A'	Experimental Group 'B'
Obtained Mean	4.86	4.93
Obtained S.D.	2.24	2.51
Difference betweet means	0.07	
Obtained '*t*'	0.07	
df (Degrees of Freedom) N^1+N^2-2	27	
Significant or not significant	Not sinificant even at 0.10 level.	

We observe from table-IV that the obtaied 't' value could not reach the required '*t*' even at 0.10 level of significance. Hence, null hypothesis was not rejected and it was concluded that there was no significant difference in mean achievement scores of the subjects of the control and the exprimental groups-'A' and 'B' taught through lecture and guided discovery methods respectively.

It may further be inferred that the observed increase (0.07) in mean achievement scores simply reflected a trend of improvement contributed by understanding component in favour of guided discovery method.

TABLE-V

Mean, S. D. and '*t*' values for 'Application' objective on post-test.

Group and obtained values	Control Group-'A'	Experimental Group 'B'
Obtained Mean	0.28	1.06
Obtained S. D.	0.27	2.61
Difference between means	0.78	
Obtained '*t*'	1.20	
df (Degrees of Freedom) N^1+N^2-2	27	
Significant or not significant	Not significant even at 0·10 level	

Required t at 0 .20 level = 1.314

From table-V, it is evident that the obtained '*t*' could not inicate any significant difference is mean achievement scores of the subjects of the two groups—'A' and 'B', even at 0.10 level of significance. However, the obtained '*t*' value can be marked to be nearly approaching the required '*t*' towards the level of significance i.e. at 0.20 level in favour of guided discovery method.

Hence, it can be inferred that the guided discovery method seems to accomplish better learning in the development of application ability though it could not be confiirmed to be significant even at 0.10 level.

TABLE VI

Mean, S.D. and *t* values for 'skill' objective on post-test.

Group and obtained values	Control Group—'A'	Experimental Group 'B'
Obtained Mean	3.00	2.93
Obtained S.D.	1.43	1.86
Difference between means	0.07	
Obtained *t*-value	0.11	
df (Degrees of Freedom)	27	
Significant or not significant	Not significant even at 0·10 level	

From table-VI, we observe that the obtained '*t*' could not reach the required '*t*' even at 0·10 level of significance. Hence, the null hypotheses was not rejected & it was inferred that there was no significant difference in mean achievement scores of the subjects taught through lecture and guided discovery methods obtained for skill, component.

An apparent mean difference of 0·07 could simply indicate a trend of development of better skills contributed by guided discovery method in the process of learning.

The data were further processed to identify as to whether or not the learning objectives contribute cumulatively presented in the table-VII and VIII below.

TABLE-VII

Mean, S. D. and '*t*' values of Cumulatively computed understanding Component and Post test K+U=U).

Groups and obtained values	Control Group—'A'	Experimental Group-'B'
Obtained Means	22.43	25.33
Obtained S. D. values	9.32	12.68
Difference between Means	2.900	
Obtained '*t*' value	0.704	
Degress of Freedom (N^1+N^2-2)	27	
Significant or not significant	Not significant even at 0.10 level.	

It is clear from the table-VII that obtained '*t*' could not reach even at 0.10 level of significance. However, a mean difference of 2.90 making contribution to the achievement of better scores in favour of guided discovery method although it could not be established at 0.05 level of significance. It is, therefore, inferred that the knowledge component makes contribution to learning process indicating a trend of improvement in favour of guided discovery method.

TABLE-VIII

Mean, S. D. and '*t*' values of cumulatively computed 'Application' component on (A=K+U+A).

Group and contained values	Control Group—'A' (Lecture Method)	Experimental Group—'B' (Guided Disco.)
Obtained Means	22.71	26.40
Obtained S. D. (σ)	9. 32	14.68
Difference between Means	3.690	
Obtained '*t*'	0.881	
Degress of fredom (N^1+N^2-2)	27	
Significant or not significant	Not-significant even at 0.10 level	

It is evident from the table-VIII that the obtained '*t*' could not reach the required '*t*' even at 0.10 level of significance. A Mean difference of 3.69 indicates that the understanding component makes contribution to application ability but it could not reflect the required level of significance.

Thus, it is inferred that 'understanding' component indicates trend of contribution to the application component showing effect to the achievement scores of the subjects of the experimental group taught through guided discovery method.

A factor analysis of the achievement scores of the control and the experimental groups' obtained on posttest was used for confirming whether or not the concept of 'Light' was acquired by the subject of the experimental groups to experimentation through guided discovery method. The values of correlation coefficient were computed by using Pearson Product moment method first treating the objectives-knowledge, understanding, application and skill independently. Finally, the values of correlation coefficient were computed by the same method by treating the learning objectives cumulatively The corresponding '*r*' values have been shown in the tables-IX and X.

TABLE-IX

Correlation Coefficient Among Knowledge, Understanding, Application And Skill Objectives Treating Independently in the Control and the Experimental Groups.

	Correlation Matrix of Posttest in the Control Group—'A'				Correlation Motrix of posttest in the Experimental Group—'B'			
	K	U	A	S	K	U	A	S
knowledge (K)		0·048	0.356	0.241		0.775	0.694	0.786
Understanding (U)			3.285	0.235			8.499	0.441
Application (A)				0.455				0.509
Skill (S)								

For df=13 ; '*r*' at 0.054 : 0.08 level=at 0.01 level=0.641.

TABLE-X

Correlation Coefficient Among the cumulatively defined Objectives knowledge, Understanding, Application and Skill in the Control and the Experimental Groups.

	Correlation Matrix of Posttest in the control Group—'A'				Correlation Matrix of Posttest in the Experimental Group 'B'			
	K	U	A	S	K	U	A	S
knowledge		0.619	0.896	0.824		0.927	0.925	0.966
Understanding			0.921	0.910			0.927	0.960
Application				0.923				0.965
Skill								

Where the notations stand for : K=knowledge ; U=understanding ; A=Application S=skill.

From the table IX, we observe that the learning objectives did not correlate significantly when the subjects were taught through lecture method, whereas all the learning objectives showed a positive correlationship with each other. On the other hand the learning objective–'knowledge' correlated significantly with the learning objectives–underst-ding, application and skill respectively at 0.01 level of significance. No significant correlationship should be established between the learning objectives understanding and application : between understanding and skill, & between application & skill at 0.05 level of significance.

Table X shows that all the learning objectives correlated significantly with eac other at 0.01 level of significance when cumulative consideration of learning was use hierarchically. However, it is noteworthy here that learning objectives correlated and a such contributed better learning when the subjects were taught through guided discover method.

Analysis of covariance was not used because of equating the two groups throug one by one matching on the previous year annual achievement.

FINDINGS

As a result of analysis of data, interpretation and discussion on the results, th following inferances were drawn :

1. Learning through discovery method (Guided, appears to accomplish bette the achievement than that through lecture method in terms of learnin objectives.

2. Contribution of analysis of independently treated learning objebtives could simply indicate a trend of improvement to learning process from lecture to guided discovery methods.
3. Cumulatively treated learning objectives indicated significant correlationship between the learning objectives in both the experimental and the control groups.
4. Factor analysis cumulatively treated learning objectives showed that the subjects gained better acheivement scores when taught through guided discovery method than did the subjects taught through lecture method.
5. Heterogeneity in standard deviation indicated high reliability of the achievement test which was computed to be 0.889 by the Kuder-Richardson formula-21. This finding was also supported in the theory of statistics described by Garret (1979).

The present study having obvious implications on both theory and practice teaching needs further investigation to conduct the experimental studies under much more controlled experimental conditions on larger samples. The present study is helpful to plan the teaching learning strategies on the basis of well defined learning objectives as taken into consideration in the present study. The study is also meaningful to develop a cumulatively derived hierarchy of learning through experiment method of research. It is further recommended to be adopted in practice so that meanningful verbal learning as advocated by Ausbel (1962, 1963, 1968) and Novak (1971 ; 1976) may take place in view of the concept of advance Organizer (Ausubel, (1963, 1968). The present study has also been supported by the above cited concept of 'advance organizer' objectives in case of teaching learning situations through guided discovery method is employed.

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Intelligence and Originality among Science and Art Students at+2 Stage—A Comparative Study

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The present was designed to compare the intelligence and verbal originality among science and arts students at +2 stage. The result revealed a superiority of science students over the arts students as the intelligence is concerned. But the two group of students did not differ significantly in verbal originality when the effect of intelligence had been partialled out.

INTRODUCTION

It is generally believed that science students excell art students both on intellectual as well as on creative &/or original thinking, But it is too early to draw out any dependable conclusions in this regard. The study of Srivastava & Jha (1977) found science students superior to art students with regards to verbal creativity including originality whereas the studies of Rawat & Garg (1977) and Sansanwal & Jarial (1979) found no stastically significant difference among science & arts students in creativity as well as its any dimension seperately. The superiority of science students in the study of Srivastava & Jha (1977) may be due to the fact that while comparing the science and arts students, the study has not partialled out the effect of intelligence so whatever the difference occurs may be due to intelligence not due to verbal creativity or originality. Furthermore, the study of Awasthy (1979) although found science student superior to arts students in fluency and flexibility dimensions of verbal creativity but not in the originality dimension of verbal creativity. The study of Jarial (1981) recently adds another factor further in these studies. He found science students superior to arts students in nonverbal creativity but arts students superior to science students in verbal creativity. Thus, it can be inferred from this study that verbal or nonverbal nature of creativity also reverses the results. Therefore, to drawout any generalized picture about the superiority of one group over the other, each dimension of creativity and also of verbal & nonverbal nature of creativity should be taken into consideration seperately and individually.

Keeping the above facts in mind, the present proposes to compare the researcher intelligence and verbal original thinking among science and arts students at +2 stage.

OBJECTIVES OF THE STUDY

In specific terms, the present study has the following objectiyes :

I. To compare the intelligence of science and arts students.

II. To compare the verbal original thinking of science and arts students.

III. To compare the verbal original thinking of science and arts studants after partialling out the effect of intelligence.

METHOD

A. Measures—The present study employ the following measures :

(i) **Baquar Mehdi's Test of Creative Thinking**—measure verbal original thinking among science and arts students at +2 stage.

(ii) **Mehrotra's Mixed Type Group Test of Intelligence**—to measure intelligence of science and arts students at +2 stage.

Both the above measures are reported to be of high reliability and validity.

B. Sample—The sample of the study consisted of 125 male students of science and arts of first year of +2 stage. The students at + 2 stage were random selected from the three intermediate colleges of Aligarh district.

In the selection of sample, following criterion were also observed :

(i) The only male students were selected.

(ii) The schools from which the sample is drawn have the same syllabi.

(iii) The schools with only urban population have been selected.

(iv) The students having age between 14 to 17 have been selected.

RESULT AND DISCUSSION

The table No.—I presents the Mean, S. D. and *t*-values of intelligence and verbal original thinking of science and arts students.

TABLE-I

Mean, S. D. and *t*-value of Science and Arts Students :

Statistics	Intelligence		Verbal Originality	
	Science	Arts	Science	Arts
N	55	55*	55	55*
X	22·64	11·46	54·62	49·94
O	6·59	4·83	11·02	9·37
t	2·23**		2·28**	

* Few cases have been left to make the number equal in two groups.

** Significant at 0·05 Level.

The above table reveals the fact that science students have higher intelligence and verbal originality both in comparision to arts students. The *t*-values of both, the intellgence and verbal originality, are statistically significant at 0·05 level.

The above stastically significant difference among science and arts students on verbel originality may be due to the intelligence not due to verbal originality. Therefore to reach at clearcut and exact conclusion, the effect of intelligence should be partialled out. To partiall out the effect, the two groups were matched by 'Matched Group Method'. Few students have to eliminate in this process in order to match the groups.

Table No.-II presents the mean, S. D. and *t*-values of verbal original thinking of science and arts students after partialling out the effect of intelligence.

TABLE-II

Stastistics	Verbal Originality	
	Science	Arts
N	34	34
X	53·43	49·04
O	10·57	9·24
t	1·84	

A look over the above table shows that the mean of the sience students is slightly higher than that of art students. The *t*-values of the two groups, further shows that there is no stastistically significant difference among the two groups. Thus, it can very safely be codcluded that science and arts students do not differ in verbal originality, whatever the difference was that was due to intelligence.

Thus the present study conludes that science students exceel arts students as far as intelligence is concerned but the same is not true for verbal originality.

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EXPERIMENTAL PSYCHOLOY : A DYNAMIC APPROCH

Dr. Govind Tiwari and Dr. (Km.) Roma Pal

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A Study of Rlationship Between Job Satisfaction and Authoritarianism of Supervisors at the Junior Management Level

Miss Promila Kumari
BHILAI (M.P.)

The purpose of the study was to explore the relationship between job satisfaction and authoritarianism of the supervisors at the junior-management level of the Bhilai Steel Plant (BSP). The population of this study consisted of 500 supervisors belonging to four different sub-groups e.g. Assistant Foremen, Foremen, Assistant General Foremen, and General Foremen. The sample was selected by employing the technique of stratified random sampling. Instruments used were Brayfield-Rothe's Job Satisfaction Index to measure job satisfaction and Adorno's F-Scale to measure authoritarianism. Correlational analysis, as predicted, revealed an inverse relationship between job satisfaction and authoritarianism. Further, a signficant difference in job satisfaction scores was observed between high authoritarian and low authoritarian groups.

INTRODUDTION

For the attainment of the organization's immediate goal of achieving greater production as also for the necessity of ensuring greater satisfaction to the employees, it becomes essential to study the factiors contributing to job satisfaction. Job attitudes are critical aspects of the adjustment pattern of the worker. They are a part of his total adjustment to living and this is basically a function both of his environment and of his personality. People differ in the way they adjustment and this is reflected in attitudes towards work as well as in all other attitudes.

The concept of job satisfaction is a many faceted one. The measurement of overall satisfaction represents a generalized effective orientation to all aspects of the job. It may be defined as a favourable feeling or psychological condition of a person towards his job situation. According to Blum (1956) 'Job satisfaction is a general attitude which is the result of many specific attitudes in three areas, namely, specific job factors, individual adjustment, and relationship outside the job'.

In terms of personality, it has been found that the individual who is flexible and mentally healthy tends to be satisfied with his job. He is realistic about himself and about his goals. In contrast, the person who is rigid, inflexible, and unrealistic in his choice of goals is unable to overcome environmental obstacles and is generally unhappy and dissatisfied with his work. He is dissatisfied not only with his job but also with himself. As Katzell et.al., (1961), suggests one s satisfaction and performance on a job are the outputs of a system in which the inputs are the personality of the worker, his other characteristics, and the characteristics of the work environment.

The authoritarian personality is a unhealthy type of personality that stands in the way of self-actualization or the realization of one's full inherent potentials. Authoritarinaism is not an unidimensional trait. It is a peculiar combination of contradictory characteristics. As conceived by Adorno et. al, (1950) it is a complex variable involving a number of related components of personality attributes. They saw as the core of the authoritarian pattern a set of behavioural and attitudinal characteristics reflecting a pre-occupation with the factors of power and authority in interpersonal relationships. They are rigid in thinking and have a one track mentality. This rigidity extends from thought into habits and behaviour. They also fear change in any form. Thus, an authoritarian individual is likely to prefer a job offering scope for bossing over others. Pestonjee and Singh (1972) observed that persons who are highly authoritarian in their approach are not satisfied with theii jobs. According to Levy (1976) low-authoritarian subjects were judged to be better adjusted than high authoritarians.

The purpose of the present study is ta examine the relationship between job satisfaction and authorianism of industrial employees with particular reference to first-line executives of Bhilai Steel Plant, a leading public sector steel industry in the country.

HYPOTHESES

(1) There will exist a significant negative relationship betweet job satisfaction and authoritarism.

(2) Subjects scoring high in authoritarianism are likely to have lesser amount of job satisfaction than than those who have low in authoritarianism scores.

SAMPLE OF THE STUDY

The sample consisted of 500 supervisors at the Junior Management Level of the Bhilai Steel Plant (BSP). There are nearly 2981 executive in the Plant, out of which the count for Junior-Managment Level goes to 2672 or so. Out of 2672 Junior-Managers, 2102 belong

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to the Works Unit of BSP. This group consists of Assistant Foremen, Foremen, Assistant General Foremen and General Foremen. From each of these four groups, a total of 24 percent of the supervisors were selected randomly.

TESTS USED

(1) Brayfield and Rothe's (1951) 18 item Job Satisfaction Index was used to measure job satisfaction. All items of this scale were translated into Hindi. The explicitness and adequacy of translations were discussed with the experts of Hindi and Psychology. The reliability of the translated version was determined by employing test-retest method. For this purpose, the translated version was administered to 100 subjects once and then again after an interval of five weeks. The coefficient of correlation obtained between the scores on the two administerations was found to be 0.89.

(2) Adorno et.al (1950), F-Scale (Form 45 to 40) was used to assess authoritarianism. The original form consisted of 30 items. For the present study three items were discarded because of their unsuitability for Indian population. The remaining 27 items were translated into Hindi. When it was confirmed that the items of the translated version correspond adequately with the items of the original scale in content and meaning, the temporal stability of this version was computed. With the gap of three weeks the two administrations, the reliability coefficient was found to be 0.83.

PROCEDURE

The scales were administered to the subjects both individually and in small group-settings ranging from five to ten, depending upon availability. Before the tests were administered sufficient rapport with the subjects was established. They were made sure that their responses would be kept strictly confidential.

RESULTS AND DISCUSSION

To obtain evidence for the relationship between the two variables, (job satisfaction and authoritarianism) product—moment correlation between the scores of job satisfaction and authoritarianism was computed for the total sample and the four sub-samples as well. The obtained results were recorded in the Table-I.

TABLE-I

Summary of correlation between scores on job satisfaction and authoritarianism for the whole and the four sub-samples.

Samples	Whole sample	Sub-samples			
		AF	F	AGF	GF
N	500	180	200	38	82
value of '*r*'	—0.42	—0.48	—0.43	—0.74	—0.25
df	498	178	198	36	80
Level of Significance	.01	.01	.01	.01	.01

Table-I reveals that the obtained coefficcients of correlation between job satisfaction and authoritarianism scores for the whole sample and sub-samples are found to be negative and are significant ot ·01 level of confidence, indicating thereby a considerably inverse relationship between the two variables. Thus, this statistically significant correlation between job satisfaction and authoritarianism scores shows that job satisfaction is negatively correlated with authoritarianism. Supervisors who are highly satisfied tended to have low authoritarianism and vice-versa. These results clearly support the hypothesis.

To obtain evidence for the other hypothesis job satisfaction scores of 25 percent subjects scoring high (from the top) and 25 percent scoring low (from the bottom) on authoritarianism scale for whole sample as well as sub-samples were obiained. The first group was called high authoritarian (HA) and the second, low authoritarian (LA). The '*t*' test was applied to test the significance of difference between the means of the extreme groups (whole sample as well as sub-samples). The results are given in table-II and III.

TABLE-II

Means and '*t*' values of job satisfaction scores of high and low authoritarian groups (N=125 in each group).

Group	Mean	SD	'*t*'	df	Level of significance
High authoritarian	43·70	10·13	9.88	248	0.01
Low authoritarian	55.01	7.73			

TABLE-III

Means and '*t*' values of job satisfaction scores of high authoritarianism and low authoritarianism groups of the four sub-samples.

Sub-Sample	High Authoritarianism			Low Authoritarianism					Level of Significance
	Mean	N	SD	Mean	N	SD	*t*	df	
AF	40.24	45	8.14	53.36	45	7.05	8.08	88	0.01
F	45.56	50	9.36	55.62	50	6.57	6.16	98	0.01
AGF	39.20	10	6.99	62.70	10	7.60	7.20	18	0.01
GF	44.00	20	7.86	55.15	20	9.38	4.07	38	0.01

A glance at Table-II reveals that the mean job satisfaction score of high authoritarian group is smaller than the mean job satisfaction score of low authoritarian group. The same type of difference exists in respect of the four sub-samples as well (Table-III). All the obtained '*t*'-values are found to be significant at 0.01 level of confidence. This provides a statistical basis to accept hypothesis 2. Thus, the more a person is authoritarian in nature, the less he will tend to be satisfied with his job.

It is observed that authoritarians are rigid and tend to maintain the 'Status Quo'. They do not like any change in the traditions which are existing. They have higher needs of order, dependence, abasement, and aggression, when they are in power they tend to use their authority to control others, and when they are in subordinates position, they accept rheir status and submit to the persons in superior positions. Herzberg (1957) has reported that the satisfied worker is more flexible and receptive to change whereas the dissatisfied worker is more rigid and intolerant of change. Gregory (1957) and Beloff (1958) have also found that high authoritarians are more rigid and inflexible than low authoritarians. Pestonjee and Singh (1972) found a moderately positive relationship between low authoritarianism and job satisfaction. After classifying the subjects as high, moderate and low in terms of job satisfaction scores, they found that low job satisfaction is positively correlated with authoritariansm and high job satisfaction is negatively correlated with authoritarianism. The results of the present study, obviously, are in agreement with the studies mentioned above.

The job of a supervisor is very difficult and demanding. He is both the management's point of contact with workers and the worker's means of contacting the management. He is therefore, an essential element in the chain of command and can block anything going upward or downward in the organizational structure. Personality difficulties of supervisors are often the cause of undesirable tensions and worries in an organization. Therefore, an assessment of personality traits becomes of importance in selection and placement situations. It is desirable to identify, at the time of employment, those individuals who have the personality traits that would be conducive to satisfactory job adjustment.

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ABNORMAL PSYCHOLOGY
—A DYNAMIC APPROCH

Edited by :
Dr. GOVIND TIWARI AND Dr. (Km.) ROMA PAL

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		Social Class			
		ScH	ScM	ScL	
Marital	M	40	40	40	120
Status	UM	40	40	40	120
		80	80	80	240

The sampling technique had been the stratified random sampling.

2·3 : Hypothesis. The present '3×2' factorial study basically has three hypothesis for each of the six experiments related to the six dimensions of modernization. As such the total number of hypothesis to be verified is 18, which are given below :

(a) Hypothesis Related to Women's Right :
  (i) Social class may effect Women's Right of working women.
  (ii) Marital Status may effect women's right of working women.
  (iii) Social class and Marital Status may interact while influencing Women's Right of working women.

(b) Hypothesis Related to Change :
  (i) Social class may affect change of working women.
  (ii) Marital Status may affect change of working women.
  (iii) Social class and Marital Status may interact while influencing change of working women.

(c) Hypothesis Related to Religiousity :
  (i) Social class may effect Religiousity of working women.
  (ii) Marital Status may effect Religiousity of working women.
  (iii) Social class and Marital Status may interact while influencing Religiousity of working women.

(d) Hypothesis Related to Mass Media :
  (i) Social class may effect Mass Media of working women.
  (ii) Marital Status may effect Mass Media of working women.
  (iii) Social class and Marital status may interact while influencing Mass Media of working women.

(e) Hypothesis Related to New Experiences :
  (i) Social class may effect New Experiences of working women.
  (ii) Marital Status may effect New Experiences of working women.
  (iii) Social class and Marital Status may interact while influencing New Experiences of working women.

(f) Hypothesis Related to work Commitment :
  (i) Social class may effect work commitment of working women.

(ii) Marital Status may effect work commitment of working women.

(iii) Social class and Marital Status may interact while influencing work commititment of working women.

3. RESULTS

F-test has been used for the verification of the hypothesis. The results of the study are given in the ANOVA tables given below :

Table 3. 1 : **Showing Summary of ANOVA in a 3×2 Factorial Study Related to Women's Right**

Source of Variance	Sum of Squares	df	MSq.	F	Significance Level
Between Ss	17995·65	5			
Social Class (S. C.	5237·66	2	5237 66	695 94	0·01
Marital Status (M. S.)	12716·70	1	6358·35	844·85	·01
S. C. × M. S.	41·31	2	20·65	2·74	N. S.
Within Ss.	1761·13	234	7·526		
Total Ss	19756·80	239			

Table 3. 2 : **Showing Summary of ANOVA in a '3×2' Factorial Study Related to Change**

Source of Variance	Sum of Squares	df	MSq.	F	Significance Level
Between Ss	19341·50	5			
Social Class (S.C.)	6263·41	2	6263142	413·91	·01
Marital Status (M.S.)	12848·06	1	6424·03	424·53	·01
S.C.×M.S.	230·02	2	115·01	7·60	·01
Within Ss	3541·10	234	15·132		
Total Ss	22882·60	239			

Table 3. 2 1 : **Breakdown of S. C. × M. S. into three Combinations**

Combinations	Ss	df	F.	Significance Level
S. C. H/M × M. S. M/UM	12·656	1	191·489	·01
S. C. H/L × M. S. M/UM	8108·256	1	12267·91	·01
S. C. M/L × M. S. M/UM	211·6	1	3201·508	·01

Table 3.3 : Showing Summary of ANOVA in a 3×2 Factorial Study Religiousity Related to

Source of Variance	Sum of Squares	df	MSq.	F	Significance Level
Between Ss	18379 82	5			
Social Class (S/C)	4874·86	2	4874·86	286·08	·01
Marital Status (M.S.)	13425·10	1	6712·55	393·92	·01
S. C.×M. S.	79·86	1	39·93	2·34	N.S.
Within Ss	3989·18	234	17·04		
Total Ss	22369·0	239			

Table 3. 4 : Showing Summary of ANOVA of 3×8 Factorial Study Related to Mass Media

Source of Variance	Sum of Square	df	MSq.	F	Significance Level
Between Ss	13896 64	5			
Social Class (S. C.)	7584·70	2	7584·70	132·29	·01
Marital Status M. S.)	6293·50	1	3146·75	54 88	·01
S. C.×M. S.	18·44	2	9 22	0·16	N.S.
Within Ss	13415·93	234	57·33		
Total Ss	27312·57	239			

Table 3. 5 : Showing Summary of ANOVA of 3×2 Factorial Study Related to New Experiences :

Source of Variance	Sum of Square	df	MSq.	F	Significance Level
Between Ss	18913·54	5			
Social Class (S.C.)	5637·74	2	5637·74	167·45	·01
Marital Status (M. S.)	13083·27	1	6541·63	194·34	·01
S. C.×M. S.	192·53	2	96·26	2·85	N.S
Within Ss	7878·20	234	33·667		
Total Ss	26791·74	239			

Table 3. 6. : Showing Summary of ANOVA OF 3×2 Factorial Study Related to Work Commitment :

Source of Variance	Sum of Square	df	MSq.	F	Significance Level
Between Ss	17392·92	5	4887		
Social Class (S C.)	4887 81	2	4887·81	375·32	·01
Marital Status (M.S.)	12112 60	1	6056·3	465·04	·01
S. C.×M. S.	392·51	2	196 25	15 06	·01
Within Ss	3047 58	234	13 023		
Total Ss	20440·50	239			

Table 3 6. 1. : Breakdown of S. C.×M. S into three Combinations

Combinations	Ss	df.	F	Significance Level
S. C. H/M×M S. M/UM	363·006	1	4726·34	·01
S. C H/L×M. S M/UM	23·256	1	302 793	·01
S. C. M/L×M. S M/UM	202·5	1	13·02	·01

4. Discussion and Conclusion

Following facts have emerged from the study—

4.1. Hypothesis No. 1 of Table 3·1, pertaining to the main effects of Social Class on Women's Right is accepted as its F-value (695·94) is significant at ·01 level which reveals that social class has a significant impact on the women's Right. The mean scores of social Class in terms of High, Middle and Low reveal that working women of high social class ($\bar{x}=56{\cdot}3$) promote predominantly women's Right in comparison to their middle and low social classes ($x=50{\cdot}3$ and $44{\cdot}9$ respectively) counterparts.

4.2. Hypothesis No. 2 of Table 3·1, pertaining to the main effects of Marital Status on womens Right is accepted as its F-value (844·85) is significant at .01 level, which reveals that Marital status has significant impact on the women's Right. The mean scores of Marital Status in terms of married and unmarried working women ($\bar{x}=57{\cdot}8$) promote predominantly Womens Right in comparison to the married working women ($\bar{x}=43{\cdot}23$).

4.3. Hypothesis No. 1 of Table 3.2, pertaining to the main effects of Social Class on change is accepted as its F-value (413·91) is significant at ·01 level which denotes that this variable has a significant bearing on the change in women. The cellwise statistics reveal that the working women of high social class ($\bar{x}=56{\cdot}64$) are predomined inclined towards change in comparison to those women who belong to middle and low social class ($\bar{x}=50{\cdot}26$ and $46{\cdot}13$ respectively) of the society.

4.4 : Hypothesis No. 2 of Table 3.2, pertaining to the main effects of Marital Status on change is accepted as its F-value (424·53) is significant at ·01 level which reveal that marital status is a potential variable in influencing the attitude of change in working women. The mean differences between the two groups of marital status indicate that unmarried working women are more inclined towards change ($\bar{x}=56{\cdot}66$) in comparison to the married working women ($\bar{x}=43{\cdot}03$).

4.5 : Hypothesis No. 3 of Table 3·2, pertaining to the first order interaction between Social Class and Marital Status is accepted as its F-value (7·60) is significant at ·01 level. The further breakdown of these independent variables into three combinations. Table 3.2.1 reveal that maximum magnitude of Social Change is availed in the unmarried working women of high social class whereby its minimum magnitude is availed in the married working women of low social class. It is as well noted that high as well middle class unmarried working women are more inclined to social change in comparison to their married counterparts. On the other hand married as well unmarried working women show more social change only when they belong to high social class of the society.

4·6 : Hypothesis No. 1 of Table 3·3 pertaining to the main effects of Social Class on Religiousity is accepted as its E-value (286·08) is significant at ·01 level which indicates that social class significantly and positively influences the Religiousity in working women. The mean scores of Social Class in terms of high middle and low reveal that high social class working women ($\bar{x}=55{\cdot}08$) promote predominantly Religiousity in comparison to the middle ($\bar{x}=51{\cdot}72$) and low social class ($\bar{x}=44{\cdot}3$) working women.

4.7 : Hypothesis No. 2 of Table 3·5 pertaining to the main effects of Marital Status on Religiousity is accepted as its F-value 393·92) is significant at ·01 level which reveals that marital status has a significant bearing on working womens Religiousity. The mean scores of marital status in terms of married and unmarried reveal that unmarried working women ($\bar{x}=57{\cdot}85$) are more inclined towards Religiousity in comparison to the married working women ($\bar{x}=42{\cdot}89$).

4.8 : Hypothesis No. 1 of Table 3.4. pertaining to the main effects of Social Class on Mass Media is accepted as its F-value (132·29, is significant at .01 level which indicates that Social Class significantly and positively influences mass media in working women. The cellwise statistics reveal that the working women of high social class display the maximum magnitude of mass media ($x=54{\cdot}51$) in comparison to the mindle ($\bar{x}=51{\cdot}63$) and low social class ($\bar{x}=41{\cdot}41$) of the society.

4.9 : Hypothesis No. 2 of Table 3.4 pertaining to the main effects of Marital Status on Mass Media is accepted as its F-value (54·88) is significant at ·01 level which indicates that marital status has a significant impact on the mass media of working women. The mean scores of marital status in terms of married and unmarried reveal that unmarried working women ($\bar{x}=54{\cdot}3$) surpass their married counterparts ($\bar{x}=44{\cdot}0$) in mass media.

4.10 : Hypothesis No. 1 of Table 3.5, pertaining to the main effects of Social Class is accepted as its F-value (167·45) is significant at ·01 level which indicates that social class has a significant impact on the New Experiences of working women. The mean scores of Social Class reveal that the working women of high social class are more inclined towards new experiences ($\bar{x}=56$) in comparison to the middle ($\bar{x}=49\ 5$ and low ($\bar{x}=44{\cdot}15$) social class.

4.11 : Hypothesis No. 2 of Table 3·5, pertaining to the main effects of Marital Status is accepted as its F-value (194·34) is significant at ·01 level which indicate that marital status significantly and positively influences working womens attitude toward new experiences. The cellwise statistics reveal that unmarried working women ($\bar{x}=57{\cdot}25$) tend to show more interest in attaining new experiences than their married counterparts ($\bar{x}=42{\cdot}51$).

4.12 : Hypothesis No 1 of Table 3.6, pertaining to the main effects of Social Class is accepted as its F-value (375·32) is significant at ·01 level which indicates that work commitment is significantly influenced by the social class. The cellwise statistics reveal that the working women coming from high social class ($\bar{x}=55{\cdot}31$) display predominantly work commitment in comparison to those who belong to either middle ($\bar{x}=51{\cdot}52$) or low social class ($\bar{x}=44{\cdot}42$).

4.13 : Hypothesis No. 2 of Table 3.6, pertaining to the main effects of Marital status is accepted as its F-value (465·04) is significant at ·01 level, which indicates that marital status has a significant bearing on the work commitment of working women. The mean scores of marital status indicates that unmarried working women ($\bar{x}=57{\cdot}85$) surpass their married counterparts in work commitment ($\bar{x}=43{\cdot}31$).

4.14. Hypothesis No. 3 of Table 3.6 pertaining to the first order interaction between Social Class and Marital Status is accepted as its F-value (15·06) is significant at ·01 level. The further breakdown of these independent variables into three combinations (Table 3.6 1) reveals that the maximum magnitude of work commitment is availed in the high social class unmarried working women whereby its minimum magnitude is availed in the married working women of low social class. It is as well noted that high as well middle social class working women particularly the married ones are more inclined towards work commitment than their married counterparts. On the other hand married as well unmarried ones show more interest in work commitment only when they belong to high social class of the society.

5. Concluding Remarks

1. It is overwhelming fact that the working women are much inclined towards modernization only when they belong to the high social stratum of the society and especially when they are unmarried as it has been found from this study that on all the six dimensions of modernization i.e. women's Right, Change, Religiosity, Mass Media, New Experiences and Work Commitment, unmarried high social class working women surpass their married other social class counterparts, which reveal that there is hierarchy in the trends of modernization.

Its magnitude increases with the increase in social class and decreases with the decrease in social class. The results of Mukerjee (1975), Singh (1978), Sinha (1979) also confirm our aforesaid contention.

2. Unmarried working women are more inclined towards modernization than the married ones. Actually the unmarried ones have more time to watch the pendulum of society. They do not accept traditional ways of life. The intergenerational gap is the crucial problem for them (Sargent and Robert, 1958 ; Moore et al, 1965). whereby the married have their own limitation and are more dependent on the wishes and directions of their husbands and the family. As such due to the insufficient exposure to the variable environment and opportunity they fail to develop a healthy and positive attitude towards modernization in comparison to the unmarried ones.

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Crowding, Stress and Helping Behaviour : A Brief Review

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The author reviews different dimensions of environment behavioral research. There has been a detailed analysis of human spatial behaviour and behavioral and phychological effects of environmental stressors. Crowding research with special reference to an arousal model has been reviewed till date. An assessment of the theory of social impact in relation to ten areas of research has been accomplished. Finally, social inhibition in helping behaviour has been discussed and further implications have been indicated.

INTRODUCTION

There has been growing interest in the area of environment-behavioural research in Psychology. Two converging lines of research, ecological psychology and environmental psychology, concerning the relationship between human behaviour and components of the architectural and the natural environment, while ecological psychology emphasises the collective processess by which groups adapt to the physical resources available in the environment, environmental psychology focuses more upon intra-personal processes, such as : perception, and learning, that mediate the impact of the individual (Stokols, 1977).

The establishment of ecological and environmental psychology as definable areas of research can be traced to the recent programmatic writings of Altman (1973), Barker (1968). Craik (1970) Proshanky, Ittel Son and Rivlin (1970) and Wohlwill (1970). During the 70's the interest has gathered momentum with the writings and findings of Evans (1975), Stokols (1972), Loo (1973), Kaplan (1974), Smith (1972), Hanson and Wicker (1973) and Winkel (1974).

From all these researchers we find a growing concern on human-environment operations or the ways in which people affect and are affected by their surroundings. It is evident in at least two major areas of environmental psychology. First, a large number of studies have dealt with human spatial behaviour (Altman, 1975, Baum and Valins, 1976, Edney, 1976 ; Evans and Howard, 1973 ; Hall, 1966 : Loo, 1972 ; Sommer, 1969 ; Stokols, 1976 ; Sundstrom, 1977). These investigations have focused on the processes by which people appropriate and regulate space in their interactions with others.

A second line of research has focused on the behavioural and psychological effects of environmental stressors, such as noise (Glass and Singer, 1972 ; Cohen and Singer, 1973), high density (Freedman, 1975 ; Rapoport, 1975 ; Sherrod, 1974 ; Stokols, 1972; Evans, 1975) and pollution (Swan, 1970).

In fact, Hall (1966), an Anthropologist launched proxemics or the study of human spatial behaviour. His research focused on the manner in which people regulate the amount of space between themselves and other depending on the degree of intimacy and the cultural context of their social encounters. Four invisible zones of comfortable interaction were posited : intimate, personal, social, and public.

Sommer's (1969) research on Personal Space contributed to a further understanding of human spatial behaviour by demonstrating the effects of specific situational variables on the individual's spatial needs.

Wohlwill (1970) contends that the environment not only elicits particular responses but also imposes constraints and exerts enduring effects on human behaviour.

The importance of psychological factors in regulating the emotional and behavioural effects of environmental stressors was demonstrated by Glass and Singer in a series of laboratory studies (1972). These studies integrated Selye's (1956) concept of physiological stress with that of Lazarus' concept of psychological stress (1966).

With regard to the effects of high density on people, initial research in this area yield a complex assortment of contradictory findings (Freedman, Klevansky and Enrlich, 1971 ; Stokols, 1972 ; Zlutnick and Altman, 1972). In an attempt to organise and understand these findings, subsequent work in the area of human crowding focused on a number of definitional and taxonomic issues. Crowding was distinguished from physical density and defined as an experiential state of perceived spatial limitation (Stokols, 1971 ; 1976), behavioural constraint (Proshanky, Ittelson and Rivlin, 1970), or unwanted social interaction (Altman, 1972 ; Valins and Baum, 1973).

Recent research has attempted to specify the personal and environmental circumstances under which high density will induce either crowding stress or positive affiliative reactions (Altman, 1975 ; Freedman, 1975 ; Evans, 1975 ; Stokols, 1976 ; Sundstrom, 1977).

Stokols (1972) has argued that an important distinction must be made between the physical parameter, density and the psychological state of perceived crowding. Density is viewed as a potential stressor and crowding as a hypothetical state which may accompany high density. Recent crowding models have explored the conditions in which high density may lead to a perceived state of crowding (Altman, 1975 ; Stokols, 1976).

Evans (1978) suggests the hypothesis that crowding acts as a stressor on humans mediated by over-arousal. Experimental analyses of human density have yield mixed support for such a concept of crowding. Many of them have supported the hypothesized stress, concept of crowding (Loo, 1972 ; Cassel, Proshanky, Ittelson and Rivlin, 1970 ; Stokols, 1976 ; Langer and Seagert 1977 Aiello, Epstein and Karlin, 1975). However, only one researcher has argued that density does not act as a stressor for human beings (Freedman, 1975).

Whatever may be the state of affairs, it is a fact that human research on stress is an extremely complex and controversial endeavour. Most of the researchers consider arousal as an underlying dimension of stress. Considerable data indicate that persons perform optimally on a variety of tasks at medium levels of arousal (Broadbant, 1971 ; Hebb, 1977 ; Kahneman, 1973). The fact that little or no effects of stressors apparent on simple tasks but that decrements do occur, more complex task situation has been explained by the Yerkes-Dodson Law, 1908, which suggests that the inverted U-shaped arousal function shifts towards lower arousal under more complex tasks.

A second important point about stress is that the human response to stressors is mediated by a host of psychological and situational variables (Asply and Trumbull, 1967 : Glass and Singer, 1972 ; Lazarus, 1966 ; Moss, 1973). There is not a simple one-to-one relationship between the quantity of a stressor and the extent of organismic response.

The theoretical analysis of Dubos (1965) and Selye (1956) plus the experiment work of Glass and Singer (1972) indicate that stress of ten has little or no immediate effects on simple human task performance. Crowding and invasions of personal space cause states of over arousal, that are experienced as Stressful (Evans and Howard, 1973). Four lines of evidence : task performance data, psycho-physiological data, individual difference data and observational data, more or less conform to the arousal model (Stokols, 1956 ; Evans, 1979 ; Goeckner, Greenough, and Mead, 1973 ; Sherrod, Evans and Howard, 1972 ; Epstein, Karlin and Aiello. 1975 ; D. Atri. 1975 ; Broadbent, 1971 ; Kalhoun, 1962 ; Hutt and Hutt 1970 ; Altman and Taylor, 1973).

Animal research also suggests that high density precipitates a stress reaction which includes marked increases in adreno-cortical system activity (Christian, 1961), decreased testicular androgen production in males and increased estrogen contents in females (Christian and Davis, 1964), as well as increases in socially maladaptive and pathological Behaviours (Alexander and Roth, 1970 ; Celhoun, 1962, 1971).

In three recent studies on rats (Mishra and Jena, 1982: Mishra and Mohanty, 1981 ; Mishra and Parida, 1981) it has been found that crowding namely, spatial density has significant effect on emotionality but there was no significant effect on spontaneous activity and exploratory behaviour.

In studying the possible stressful effect of crowding upon human behaviour several points should be noted : (i) Research indicates that short term exposure to a stressor has little or no immediate effect on simple task performance. In order to measure the effects of a stressor on human performance one must either examine more complex task performance or employ post-stressor task probes. Thus, while exposure to a stressor on human performance may precipitate feelings of discomfort and even psychophygiological indices of stress, simple task performance is resistant to immediate effect.

In one study (Evans, 1979) it was to investigate the effects of crowding on human performance. Results generally supported the hypothesis that crowding acts as a stressor which may be mediated by over-arousal. Moderate decrements in complex but not simple task performance were found for crowded subjects as compared to uncrowded controls. Poorer performance on a group co-operation task and less tolerance for frustration as an after effect of the crowded experience were reported. Crowded subjects in comparison to control also exhibited significant elevations in blood pressure and hulse rate and manifested additional behavioural indices, which included greater behavioural stereotypes, increased defensive postures, more remarks toward the door of the experimental rooms and self-reports of greater discomfort and hostility.

Cohen (1978) has proposed an alternative explanation of the effects of environmental stressor on human performance. He suggests that overarousal does not cause stress, but rather that overarousal may be symptomatic of an information-over load state. According to Cohen's theory, stressors place some load on the information peocessing system. Given the limited information processing capacity of the individual, the load demands of a stressor plus the load demands of a task will at a certain point exceed information processing capacity and be experienced as an overload state. Simply it can be experinced that complex tasks place more load demands on the information processing systems than do simple tasks. Another weakness in arousal theory is the lack of a straight forward explanation of after effect from exposure to a stressor. Cohen's overload theory can perhaps explain such after effects in that following overload, the system may not be able to process information accurately, because it is still overloaded or the overload situation creates a state of fatigue from which it takes some time to recover. At this stage it is very difficult to distinguish Cohen's theory from that of the arousal mode.

In feact several areas of future research warrant considerations. First, the concept of environmental stress is clearly a complex problem that involves issues of attention allocation, temporal dimension, important mediating psychological variables such as, perceived control. One may ask a question-do invasions of personal space creates after effects ?

Most probably crowding research has no satisfactory answer to this question. Whol will (1974) has proposed an argument that an important variable in a persons reaction to environmental cues is the individuals adaptation level to privious exposures to those cues. Our past experience and more long term adaptations and adjustments to environmental stressors are important individual factors. I think, this factor has a great relevance in the Indian context.

Patterson (1976), has recently proposed an arousal model of interpersonal intimacy behaviours. Given a dyadic, interaction context, a change in one individual's intimacy behaviour is said to cause an arousal shift in the other person. This arousal shift can be labeled positively or negatively, resulting in reciprocal or compensatory responses, respectively. It appears that this model focuses on more interpersonal, social contexts than the task-oriented settings of the traditional arousal model.

Another aspect of physical space that has received increasing attention is personal space. It can be defined as the area surrounding a person's body into which intruders may not come (Sommer, 1959). A recent theory suggests that personal space is a functional, mediating, cognitive construct which allows the human organism to operate at acceptable stress levels and aids in the control of intra-species aggression. (Evans and Howard, 1973).

Let us examine the stressors and their psychic costs. Noise happens to be a principal stressor (Glass and Singer, 1972). The pattern of results obtained with noise has been obtained with other stressors. The two major factors are unpredictability and uncontrollability surrounding noise exposure. These two variables produce similar effects with social stressors such as bureaucratic frustration, arbitrary discrimination and crowding, thereby permitting the general assumption that deleterous after effects of stress are probably a function of the unpredictability of aversive stimulation and the belief that one has little control over stimulus occurance.

Physical and Social stressors have few direct effects on performance. People adapt to stress. But stressors do have disruptive after effects and there tend to be a function of the cognitive circumstances in which stimulation occurs rather than of the sheer magnitude of intensity of stimulation. It does not mean that after effect phenomena are the 'psychic price' paid by the individual for his adaptation to aversive events. It is entirely possible that after effects are as much post-stressor phenomena as postadaptation phenomena (Glass, Singer and Pennebaker, 1977). Adaptation is assumed to be a cognitive process involving one or another mechanism designed to filter out of awareness certain aspects of the aversive event or in some other way reappraise it as benign. It is also assumed that physiological adaptation is one index of this process and that the efforts entailed in achieving adaptation is reflected in the magnitude of decline of physiological response to the stressor. It may be suggested that after effect phenomena represent behaviourable residues of cumulative exposure to uncontrollable noxious stimulation. It is not the adaptive process itself that cause deleterious after effects but the fact of continued exposure to a stressful event inspite of adaptation (Glass and Singer, 1972).

Finally, we may present a social-spatial model of crowding stressors. The model combines clinical and social-psychological phenomena (Loo, 1977). Crowding stress exists when individual needs and characteristics are not synchronous with the constraints of the environment : stress can be measured by affective responses and/or physiological changes or by behavioural indices of anxiety. Social-crowding stress results from situations in which the number of people present or the amount of personal space allowed are contrary to individual needs, causing anxiety or frustration. Social-crowding stress is experienced in the socially crowded and socially undercrowded conditions. In the socially crowded condition, stress is due to the presence of either too many people or to intrusions on one's personal space by others. In the socially undercrowded condition, stress is due to the absence of people or to a need for closer interactional distance between oneself and another. There is a need for affiliation with others, intimacy and social contact either because of an insecurity in being alone or a strong need for physical closeness.

Spatial-crowding stress refers to a situation in which the amount of physical space surrounding the individual is contrary to the individual's level of comfort. In the spatially crowded condition, stress is due to having insufficient space available for individual comfort and normal functioning. In a spatially undercrowded condition, stress is due to an individual's experience of an excessive abundance.

Crowding in the cities has led to new style of living, that of the condominium and high-rise. Several changes come so quickly as to create confusion and insecurity. We need to know how such changes affect human behaviour. We are going beyond a point of our control. The ability to cope is a healthy one. Yet consciousness of one's environment and its effects are of primary importance. If human beings continue always to cope, without being conscious of what we are creating and what it is in turn creating in us, we may never initiate the actions or alter the attitudes necessary to modify these conditions.

It seems that the 'psychology of social impact' (Latane' 1981) is functionally related to crowding. After the analysis of 'bystander intervention' (Latane and Darly, 1970 in emergencies, it was strongly proposed that the presence of other people serves to inhibit the impulse to help. This research generated interest because of its high-degree of mundane realism, high level of experimental realism (Aronson and Carlsmith, 1978), strong theoritical framework, and the novelty of the phenomenon itself : the social inhibition of helping.

There are three social psychological processes that might occur when an individual is in the presence of other people, and all three are apparently necessary to fully account for the phenomenon of the social inhibition of helping. The first process is audience inhibition. The presence of others can inhibit helping when individuals are apprehensive that their behaviour can be seen by others and evaluated negatively. The second process is social influence. In a Crowding situation, since the helplng situation is a little more ambiguous, the individual looks for others to define it. If he considers it less critical or decides that inaction is the expected pattern of behaviour, there is inhibition of helping. Finally, diffusion of resonsibility can be viewed as a means of reducing the psychological cost associated with non intervention. When others are present, such costs are shared and nonintervention becomes more likely.

Taking into consideration the nature of the precipitating incident, the ambiguity of the helping situation, laboratory versus field settings, characteristics of the subjects, of the victim, and of other bystanders, and the amount and kinds of communication among bystanders, it may be concluded that social inhibition of helping is a consistent phenomenon and it is remarkably related to group size (Latane' and Nida, 1981).

The theory of social impact suggests that when other people are the source of impact and the individual is the target, impact should be a multiplicative function of the strength, immediacy, and number of other people. Impact may take the form of a power function, with the marginal effect of the Nth other person being less than that of the (N-1) th. Supportive evidences of the theory come from research on Conformity and imitation (Asch, 1951, 1952, 1956; Gerad, Wilhelmy and Cynolley, 1968; Milgram, Bickman and Berkowitz, 1969), stage fright and embarrassment (Latane and Harkins, 1976). News interest (Bassett and Latane, 1976), bystander intervention (Latane and Darley, 1970; Latane and Nida, 1981), tipping (Freeman, Walker, Borden, and Latane, 1975), inquiring for Christ (Wilson, 1970), productivity in groups (Latane, Williams, and Harkins, 1979), and crowding in rates (Latane Cappall, and Joy, 1970). One important implication is suggested : as a matter of fact, after the first few others are present, additional crowding seems to have relatively little effect.

However, there are two possible problems with this theory. First, the theory view people as passive recipients of social impact and not as active seekers. It could be more convincing and meaningful if it would incorporate mechanisms for people to control and direct their exposure to social impact. Second, the theory does not have a necessary dynamic dimension. It could more clearly specify the means whereby the consequences of social impact cumulate as the people in a social setting react to and interact with each other.

We live in a period of great social growth. Populations are getting larger and life is becoming more and more interdependent. Choice problems and value judgements demand decisions such as how many people to appoint to a committee, how many students should be in a class room, or how many prison inmates should be in a cell.

It is becoming more and more important to understand both the positive and negative ways in which people have impact on each other and to design our physical and social environments so as to maximise the quality of life for all. Otherwise several kitty Genovese tragedies will go unnoticed. But we also know George Valdez (Blank, 1970) case, who rescued two girls involved in a serious car accident. Why do some people fail to help others in desperate need ? Why do other people help, even when helping involves considerable cost ? These questions and their answers have both social-psychological and theoretical relevance. Our faith in an egoistic model of human motivation has become so strong that it has almost become a tautology. It is a fact that George Valdez was motivated just by a desire to see his name in the headlines ? Historically, even relatively cynical observees of human behaviour have not been willing to limit motivation exclusively to selfish desires, gains, benefits, or rewards.

Adam Smith, a noted champion of egoism and laissez-fair, even asserted : How selfish soever man may be supposed, there are evidently some principles in his nature which interest him in the furtune of others, and render their happiness necessary to him (1759). This is a challenge to the convictions of social scientists interested in their fellow beings. Malthus died in 1834. Now the over-crowded world remembers his essay on population density when there are 4·5 billion shadows. Beyond that numbers become wild. Yet, as the clocks ticks away, with doomsday inexorably approaching, there is still no serious attempt to grapple with desperate problems.

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Dogmatism and value Orientation A Study Towards verification of rokeach's Theory of belief System

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The present study was undertaken to verify one of the crucial aspects of Rokeach's theory of belief-disbelief system. Rokeach conceptualised dogmatism interms of structural characteristics of belief system and claimed that organization of belief system has nothing to do with its content. Our findings show that Rokeach's claim can not be accepted in toto. Not only that nondogmatic and dogmatic individuals were found to differ with respect to 24 values, it was also found that dogmatic individuals following different religious and political beliefs also differ with respect to certain values. This difference may be due to their strict adherence to those values which are of fundamental significance in the belief system they subscribe to.

INTRODUCTION

Rokeach (1960) conceptualized dogmatism in terms of structural characteristics of belief system and claimed that dogmatism is not confined to any particular ideology. According to him it is not the content of the belief of an individual but the style of his belief that makes an individual authoritarian or nonauthoritarianism hinges on the mode of belief rather than the content then not only fascist but anti-fascist beliefs may also be organized in the closed system. In this way, Rokeach claimed that dogmatism has nothing to do with the content of belief system.

Rokeach's claim that content has nothing to do with organization, is not supported by his own findings (Rokeach. 1960) and the findings of others, e.g., Barker, 1963 ; Karabenic and Wilson, 1961; Bailes and Guller, 1970: Grainberg and Corrigan, 1972.

According to Rokeach's conceptualization it is reasonable to expect that since dogmatics and nondogmatics differ in axiomatic beliefs and that dogmatism has nothing to do with particular religious, social and political beliefs, there would be some fundamental values which will be shared by dogmatics among themselves and some by nondogmatics irrespective of their ideological differences. In this context it was hypothesized that :

(1) Dogmatic and nondogmatic individuals will differ in their Value-orientations, and

(2) Dogmatism will not interact with reilgious and political beliefs to inflnence Value-orientations.

DESIGN OF THE STUDY

On the basis of the nature of hypotheses which the present investigation aimed to test, the study involved three independent variables namely, dogmatism, religion and political opinion on the one hand, and 32 different ways of life as dependent variable was varied in two ways, the 2×2×2 factorial design was employed. In all 32 analyses of variance were carried out.

In order to test the above stated hypotheses eight groups of subjects were used in this study namely :

(1) Dogmatic and Rightist Muslims
(2) Dogmatic and Leftist Muslims
(3) Nondogmatic and Rightist Muslim
(4) Nondogmatic and Leftist Muslims
(5) Drgmatic and Rightist Hindus
(6) Dogmatic and Leftist Hindus
(7) Nondogmatic and Rightist Hindus
(8) Nondogmatic ond Leftist Hindus

SAMPLE

The subjects used in this study were undergraduate male students from the age range 18 to 22 years, from the faculties of Arts, Social Sciences, Science and Commerce of the Aligarh Muslim University, Aligarh.

PROCEDURE

In order to form eight groups of subjects mentioned earlier, adapted Dogmatism Scale (Hasan, 1974), and Opinionation Scale (Khan, 1977) were administered on two hundred Muslim and two hundred Hindu students.

The scores obtained by the subjects on the two scales were tabulated in the form of frequency distributions and P75 and P25 were obtained for assigning subjects to high and low groups. The value of these cutting points is given below :

	P75	P25
Dogmatism Scale	163·15	121·35
Oponionation Scale	63·55	31·15

Employing the above mentioned cutting points four groups of Muslims and four groups of Hindus (as mentioned above) were formed. Since the minimum number of subjects falling in a groups was made equal by randomly eliminating as many subjects as were more than 12. In all there were 96 subjects in eight groups. The subjects comprising the eight groups were administered Kilby (1963) ways to Live III Questionnaire.

TABLE–I

Summary of Anlyses of Variance.

S.No.	Ways of life	Dogmatism	Religion	Politics	Dogmation & Religion	Dogmatism & Politics
1.	Vigorous action	53.804*	0.956	2.152	2.325	2.152
2.	Openners to change	.933*	3.655	11.844*	3.059	0.406
3.	Prosperity	27.076*	2.644	0.105	2.122	0.000
4.	Sociability	2.422	3.296	0.605	1.076	4.305**
5.	Helpfulness	0.000	33.426*	0.170	1.534	0.682
6.	Acceptance of things	261.010*	4.018**	42.067*	0.013	1.682
7.	Enjoyment	99.930*	52.017*	85.102	4.754**	1.378
8.	Let self be used	17.741*	4.435**	14.370*	34.774*	11.354*
9.	Community living	94.178*	9.643*	2.410	2.230	0.150
10.	Averageness	86.797*	0.540	2.163	26.508	3.039
11.	Individuality	0.956	0.059	0.059	0.538	0.059
12.	Avoid problems	35.826*	6.807**	17.171*	2.541	0.588
13.	High esteem	14.060*	7.173*	7.173*	2.202	0.797
14.	Enlightenment	0.293	2.640	18.773*	1.560	0.293
15.	Equality and tolerance	56.547*	0.302	0.033	1.076	0.302

Contd....

16.	Achievement	115.931*	5.266**	0.280	0.280	0.280
17.	Preserve traditions	522.862*	4.742**	25.280	2.325	0.526
18.	Solitariness	17.387*	0.039	0.354	3.259	0.039
19.	Solving of problems	2.514	0.628	7.699*	1.534	2.152
20.	Security and safety	178.200*	75.473*	178.200*	3.333	75.473*
21.	Self development	1.005*	1.805	4.061**	2.560	2.560
22.	Adapting to nature	124.142*	2.406	27.231*	0.023	0.019
23.	Beauty	3.695	7.894*	1.071	1.532	2.152
24.	Personal independence	89.795*	2.020	0.897	1.120	0.224
25.	Possessions	614.209*	1.392	2.302	47.780*	10.260*
26	Divernity and balance	382.791*	0.300	9.662*	2.702	0.300
27	Useful citizen	26.292*	0:536	0.134	1.207	0.536
28	Self-reliance	7.910*	2.293	2.293	1.170	3.022
29	Simple enjoyment	106.589*	61.565*	0.682	0.170	2.558
30.	Friendship and affection	24.189*	0.226	4.254**	0.629	3.045
31.	Self-control	11.604	1.289	0.725	3.523	6.527**
32.	Pleasing personality	0.421	1.170	2.293	2.659	2.293

* Significant at .01 level.
** Significant at .05 level.

RESULT & DISCUSSION

Findings of the present study show that nondogmatic Hindus and Muslims do not differ with respect to none of the values. This shows that all the nondogmatic or openminded individuals irrespective of their religious beliefs subscribe to similar beliefs. In contrast dogmatic Hindus and Muslims differ with respect to four values viz., (1) Enjoyment (Mean Kog. Hin.=6·166, Mean Dog. Musl. =4·583), (II) Let self be used (Mean DH=6·662), (III) Averageness (Mean DH=4·330, Mean DM=5·416) and (IV) Possessions (Mean DH=6.041 Mean DM=4·353). This may be due to the fact that in the case of dogmatic individuals Religious differences bringout certain differences in their outlook. This may be so due to their adherence to their own religious creed which emphasize certain values.

The findings further show that Leftist dogmatics and Rightist dogmatics differ with respect to (I) Sociability (Mean Left. Dog. =6·375. Mean Right. Dog. =5·111), (II) Let self be used (Mean LD=6·25, Mean RD=5·15), (III) Security and safety (Mean LD=5·625, Mean RD=6·541) and (IV) Possessions (Mean LD=5·5, Mean RD=6.54). While nondogmatic Leftists and nondogmatic Rightist differ with respect to (I) Security and safety (Mean Nondog. Left.=3·916, Mean Nondog. Right.=6·083) and (II) Self control (Mean Nondog. Left.=4·75, Mean Nondog. Right.=5·5). Nondogmatic Leftist and Rightist individuals do not differ in their values as much as dogmatic Leftist and Rightist differ.

Our findings show that Rokeach's claim that organization of belief system has nothing to do with its content can not be accepted in toto. Not only that nondogmatic and dogmatic individuals were found to differ with respect to 24 values, it was also found that dogmatic individuals following different religious and political beliefs also differ with respect to certain values. This difference may be due to their strict atherence to those values which are of fundamental significance in the belief system they subscribe to. In contrast, nondogmatic individuals following different Political and Religious ideologies donot differ as much among themselves. This may be so because they subscribe to certain values which are crucial for making them nondogmatic. This is also because they are not blind follower of the faith to which they belong and also that they are to learnt of other's viewpoint.

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Neuroticism and Extraversion of University Student Dissidents and Nondissidents

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The 48-item Eysenck's M. P. I. (Hindi Version) was administered to the student samples (male) of dissidents (N=72) and non-dissidents (N=80) from Kurukshetra University. Reliabilities of the Neuroticism and Extraversion scales were found to be high on these samples. A 2×2×2 (type × area subject) analysis of variance was used to find whether there were any significant differences on the two scales with respect to the three dichotmous variable. It was found that the university students were significantly more neurotic and extraverted as compared to the non-dissidents.

INTRODUCTION

A large number of studies have been reported on neurotism and extraverson. Some of these studies (Eysenck, 1954, 1954, Open, 1971, Eysenck and Coulter, 1972, Stanley and Vagg, 1975) have treated these personality characteristics in relation to certain peculiar groups of subjects (Communists, Fascists Protestant Fundamentalists etc.) and reported interesting results concerning their behaviour and personality. In the present study an attempt is made to examine these personality characteristics in such an exceptional group of student conform to the University authorities and take active part in political and protest activities. The so called university student dissidents have been compared with non-dissidents on neuroticism and extraversion.

METHODS

(a) Measures and Samples

Indian adaptation (Hindi Verson) of the 48-item Eysenck's Maudley Personality Inventory (Jalota and Kapoor, 1965) and a Student Questionnair were administerd on snow ball samples of university student dissidents (N=72) and non-dissidents (N=80) from various faculties and non-dissidents was based on the nonconformity-conformity (towards university authorities) criterion and four political and protest activities (working for a party candidate, contesting the student body elections, willing to participate in activities which might involve suspension/expulsion/arrest and participation in strikes demonstrations/rallies dharnas/gheraos/physical combate with police etc.). A part of the Student Questionnaire included questions regarding political and protest activities and academic and demographic variables.

(b) Reliabilties and Relationships

The split half reliabilties were found on each of the personality dimensions for dissidents and non-dissidents separately. The odd-even correlations on the dissident sample (N=72) were found to be $r_{OE}=.7523$ for Neuroticism and $r_{OE}=.5047$ for Extraversion. On the non-dissident student sample (N=80) these figures were $r_{OE}=.7974$ for Neuroticism and for Extraversion $r_{OE}=.5703$. Table 1 shows the reliabilties of the full length scales.

TABLE–1

The full length reliabilties on Neuroticism and Extraversion Scales on Dissident and non-dissident Student samples.

Dimension	Reliabiltity	
	Dissidents (N=72)	Non-disssidents (N=80)
Neuroticism	.8586	.8873
Extraversion	.6709	.7263

It is clear from the table that the figures are higher than those obtained by Jalota and Kapoor (1965) and are comparable to those on the English Data (Eysenck, 1970, P. 122).

Correlations between the scores on Neuroticism and Extraversion scales are found to be $r_{NE}=-.1191$ for dissidents and $r_{NE}=-.1561$ for non-dissidents. These correlations are in good agreement with those on the English sample ($r_{NE}=-.1476$).

RESULTS AND DISCUSSION

The data from the samples of dissidents (N=72) and non-dissidents (N=80) were combined and subjected to a 2×2×2 [type (dissidents and non-dissidents) × area (Rural and Urban) ×Subject (Science and Humanities] analysis of variance on the scores from each of of the factor scales. The differences among the various comparisons with respect to the three independent variables and their interactions have been discussed for Neurottcism and Extraversion scales separately.

Neuroticism

Table—2 shows the summary of analysis of variance on the Neuroticism scale. It is clear that the only significant value of the mean square is on the type variable (F=4·36, p<·05) which leads us to conclude that the two means on this variable (18·00 for dissidents, N=72 and 14·71 for non-dissidents, N=80) differ significantly (t=2·088, df=149, p<.05). Student dissidents are thus, found to be significantly more neurotic as compared to the non-dissidents. None of the other variables and interactions give significant difference on this personality dimension.

TABLE–2

Summary of ANOVA (Neuroticism).

Source of Variation	df	Sum of Sqares	Mean Square	F—ratio
Type (dissidents and non-dissidents)	1	409·55	409·55	4·36*
Area (Rural and Urban	1	204·69	204·60	2·18
Subject (Science and Humanities)	1	140·48	140·48	1·50
Type × Area	1	206·23	206·23	2·20
Type × Subject	1	85·03	85·03	0·91
Area × Subject	1	260·13	260·13	2·77
Type × Area × Subject	1	34·28	38·28	0·37
Within conditions	144	13518·30	93·88	
Total	151			

From table F for $df_1 = 1$ and $df_2 = 144$ $F=3.90$ at $P=\cdot 05$

$F=6.81$ at $P=\cdot 01$

(b) Extraversion

Table—3 shows the summary of analysis of variance for Extraversion scale. The mean square on the type and subject variables and the interactions Area × Subject and type × area × Subject are significant.

TABLE–3

Summary of ANOVA (Exteraversion).

Scoure of Variation	df	Sum of Square	Mean Sruare	F—ratio
Type	1	300·35	300·35	8·42*
Area	1	0·19	0·19	0·005
Subject	1	197·42	197·42	5·56*
Type × Area	1	5·02	5·02	0·14
Type × Subject	1	48·42	48·42	2·36
Area × Subject	1	303·41	303·41	8·55
Type × Area × Subject	1	194·10	194·13	5·46*
Within Conditions	144	5108·74	35·48	
Total	151			

Applying *t*—test (after *F*—test) given the following significant differences :

(i) The significant value of type mean square corresponds to a comparison between the means for dissidents (N=72) and non-dessidents (N=28). The dissidents are found to be significantly more extraverted as compared to the non-dissidents ($t=2{\cdot}91$, df=149, $p<{\cdot}01$).

(ii) On the subject variable, humanities students are significantly more extraverted than do the science students ($t=2{\cdot}36$, df=149, $p<{\cdot}05$)

(iii) Only one of the six differences on the interaction (Area × Subject) is found to be significant. Humanities students from Rural areas are significantly more extraverted as compared to the science students from rural background ($t=2{\cdot}32$, df=54 $p<{\cdot}05$)

(iv) The interaction type × area × subject give the following five significant differences :

- (a) Rural-humanities-dissidents are found to be more extraverted than do the Rural-science-dissidents ($t=2{\cdot}39$, df =23, $p<{\cdot}05$).
- (b) Rural-humanities-dissidents score significantly higher on the Extraversion scale as compared to the Rural-science-nondissidents ($t=2{\cdot}18$, df=25, $p<{\cdot}01$).
- (c) Rural-humanities-dissidents are significantly more extraverted as compared to Urban–humanties-nondissidents ($t=2{\cdot}18$, df =33, $p<{\cdot}05$).

(d) Rural-humanities-dissdents are significantly more extraverted as compared to Urban-humanities-nondissidents ($t=2\cdot18$, df$=33$, $p<\cdot05$).

(e) Urban-humanities are found to be significantly more extraxerted than do the Rural-science-nondissidents ($t=2\cdot06$, df$=36$, $p<\cdot05$).

These findings suggest the relationship of political and protest behaviour with neuroticism and extraversion.

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